

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
January 8, 2015

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vacuum truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for January 8, 2015 07:00 to January 9, 2015 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine (Cl_2), hydrogen sulfide (H_2S), percent of the Lower Explosive Limit (LEL), oxygen (O_2), particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems® AreaRAE units with a ProRAE Guardian system at four locations on the fence line of the facility within the work area. Additional units (Unit 10 and Unit 11) were also deployed. Unit 10 was deployed in the cab of an excavator supporting waste removal operations. Unit 11 was deployed along the fence line of the facility between the 120 barrel tank truck and Mission Rock Road (primarily to monitor Cl_2 concentrations near the tank truck). AreaRAE units were equipped with sensors to detect Cl_2 , VOCs, LEL, H_2S , and SO_2 . Unit 10 recorded Cl_2 detections of 0.1 ppm on 1/8/2015 at 13:37, 5.2 ppm on 1/8/2015 at 16:05, and 0.4 ppm on 1/8/2015 at 16:05. Unit 11 recorded Cl_2 detections of 0.1 ppm on 1/8/2015 at 14:06, 2.3 ppm on 1/8/2015 at 14:10, 7.4 ppm on 1/8/2015 at 14:11, 0.7 ppm on 1/8/2015 at 14:13, and 0.9 ppm on 1/8/2015 at 15:37. These detections were instantaneous and not sustained for more than one 15-second instrument polling interval. These detections therefore did not exceed the site-specific action levels. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were collocated with AreaRAE units 01, 02, 03, and 04 and data-logged to monitor PM_{10} . An additional unit was logged in the cab of an excavator supporting waste removal operations. Table 3 summarizes data-logged particulate monitoring data.

Table 1: Manually-Logged Real-Time Air Monitoring Summary¹
January 8, 2015 07:00 – January 9, 2015 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Detection Range ²
Work Area	Cl ₂	Gastec 8La	1	0	NA	< 0.05 ppm
		MR+ / MR Pro	13	0	NA	< 0.1 ppm
	H ₂ S	MR+ / MR Pro	9	0	NA	< 1 ppm
	LEL	MR+ / MR Pro	13	0	NA	< 1 %
	O ₂	MR+ / MR Pro	5	5	20.9	20.9 - 20.9 %
	PM ₁₀	AM510/Dusttrak	8	8	0.021	0.012 - 0.035 mg/m ³
	SO ₂	MR+ / MR Pro	13	0	NA	< 0.1 ppm
	VOC	MR+ / MR Pro	13	0	NA	< 0.1 ppm

¹Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.

Table 2: AreaRAE Air Monitoring Summary¹
January 8, 2015 07:00 – January 9, 2015 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range ²
Unit 01	H ₂ S	5264	1	0.2 ppm	0.2 - 0.2 ppm
	LEL	5264	0	NA	< 1 %
	SO ₂	5264	0	NA	< 0.1 ppm
	VOC	5264	0	NA	< 0.1 ppm
Unit 02	H ₂ S	5275	0	NA	< 1 ppm
	LEL	5275	0	NA	< 1 %
	SO ₂	5275	0	NA	< 0.1 ppm
	VOC	5275	406	0.1 ppm	0.1 - 0.2 ppm
Unit 03	H ₂ S	5284	0	NA	< 1 ppm
	LEL	5284	0	NA	< 1 %
	SO ₂	5284	0	NA	< 0.1 ppm
	VOC	5284	0	NA	< 0.1 ppm
Unit 04	H ₂ S	5116	153	0.1 ppm	0.1 - 0.2 ppm
	LEL	5116	0	NA	< 1 %
	SO ₂	5116	0	NA	< 0.1 ppm
	VOC	5116	5	0.1 ppm	0.1 - 0.1 ppm
Unit 10	Cl ₂	1851	3	1.9 ppm	0.1 - 5.2 ppm
	LEL	1851	0	NA	< 1 %
	SO ₂	1851	0	NA	< 0.1 ppm
	VOC	1851	1396	0.2 ppm	0.1 - 0.5 ppm
Unit 11	Cl ₂	5271	5	2.3 ppm	0.1 - 7.4 ppm
	SO ₂	5271	0	NA	< 0.1 ppm
	VOC	5271	3	0.1 ppm	0.1 - 0.1 ppm

¹Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.

Table 3: AM510 PM₁₀ Monitoring Summary¹
January 8, 2015 07:00 – January 9, 2015 07:00

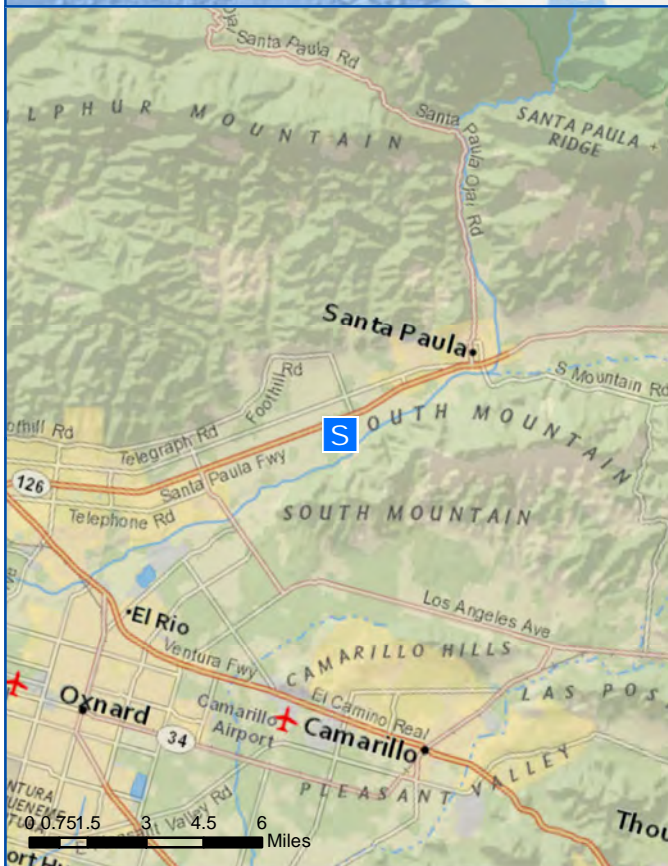
Serial No.	Location	No. of Readings	No. of Detections	Avg. Detection	Detection Range
11005015	AR01	1757	1757	0.025	0.002 - 0.239 mg/m ³
10503020	AR02	5652	5644	0.021	0.001 - 0.295 mg/m ³
10704075	AR03	5684	5659	0.021	0.001 - 0.42 mg/m ³
10601073	AR04	5642	5642	0.028	0.001 - 1.91 mg/m ³
10704070	Excavator 200D (AR10)	646	607	0.007	0.001 - 0.128 mg/m ³

¹Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

Appendix A

Incident Maps:

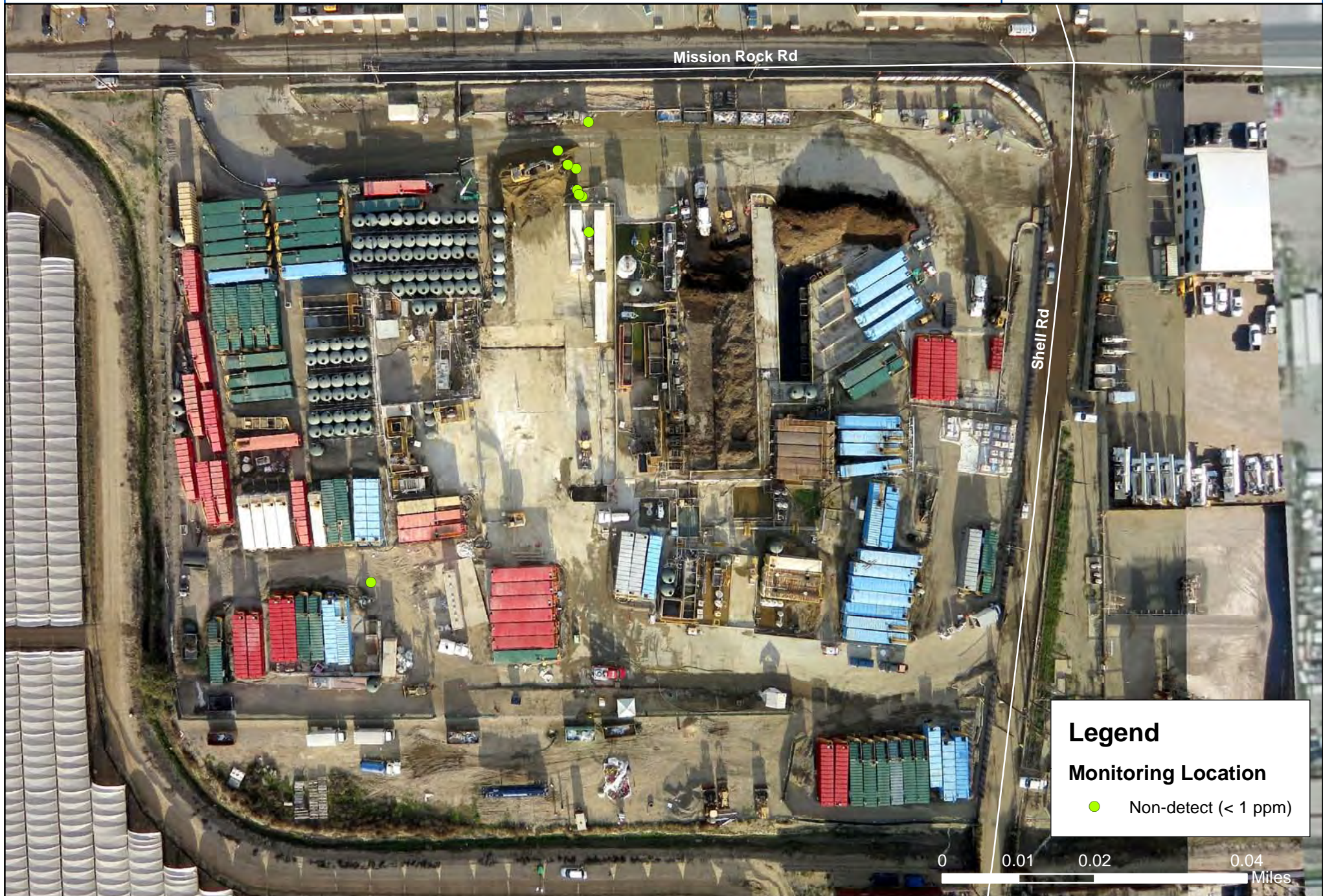
Real-Time Air Monitoring Locations and Incident Site



Legend
 Site Location









Legend

Monitoring Location

● Non-detect (< 1 %)



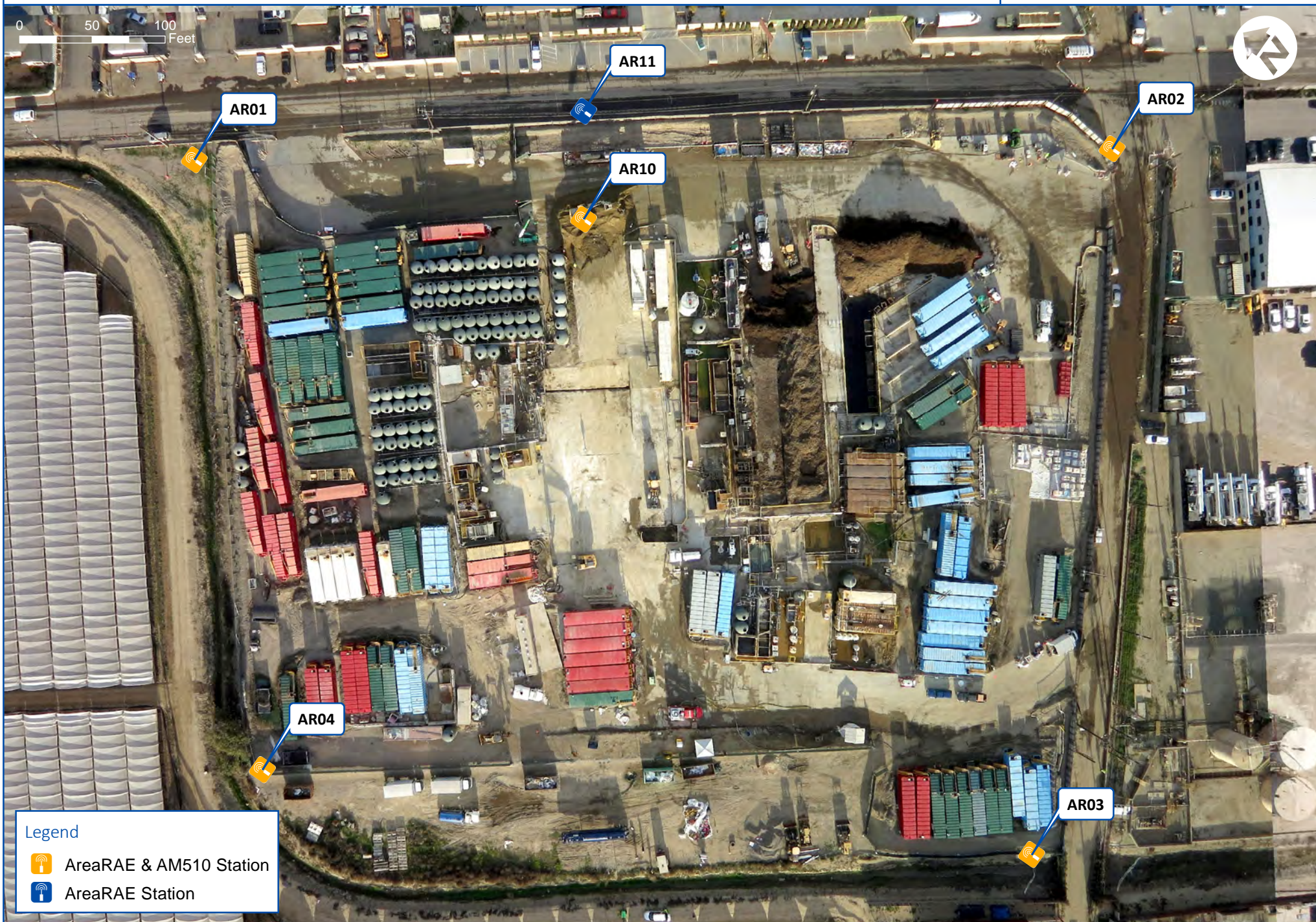




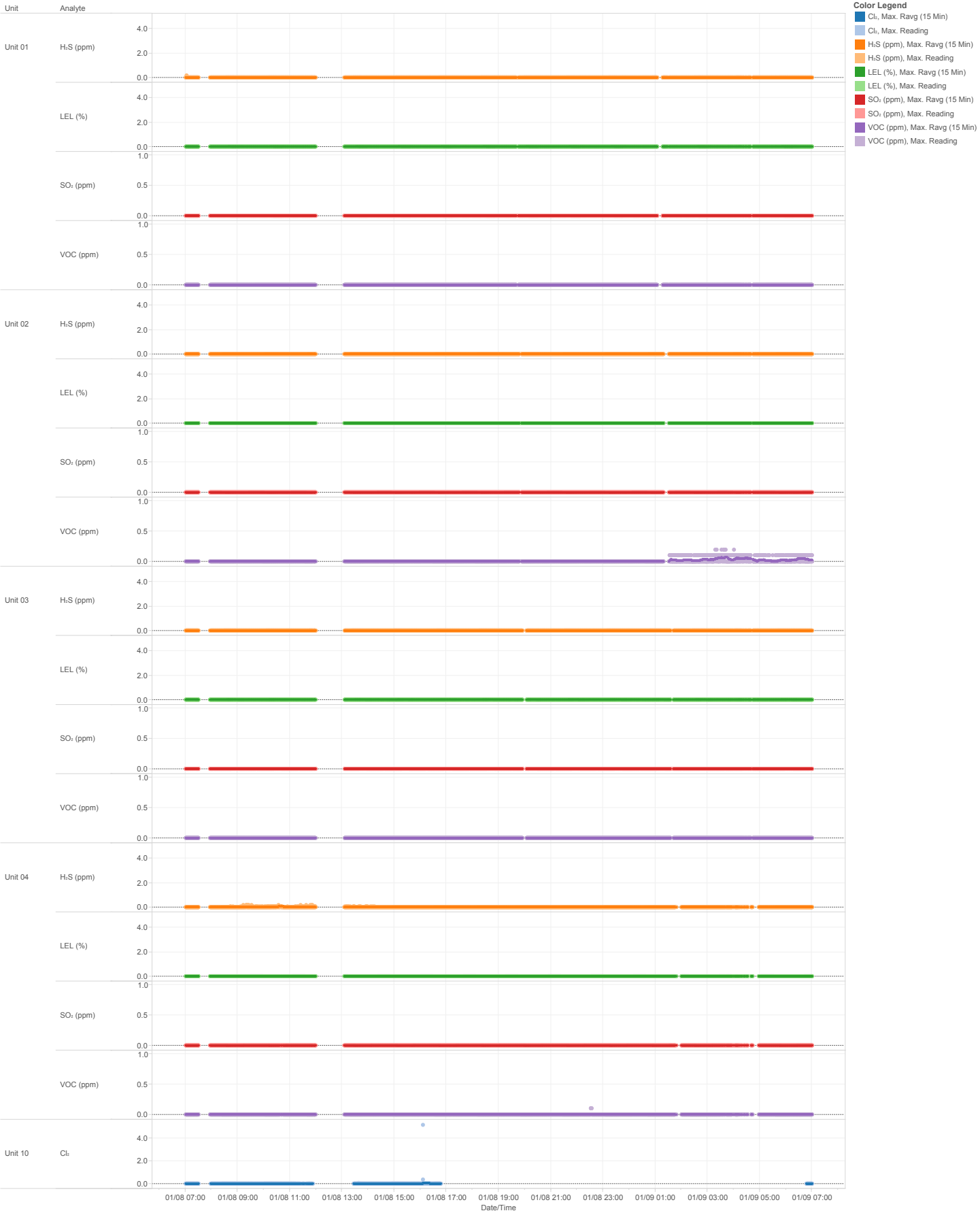


Appendix B:

AreaRAE Trend Graphs, AM510 Trend Graphs, and Location Map



Patriot Environmental
AreaRAE Trend Graphs
1/08/2015 07:00 - 1/09/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

The figure displays gas concentration data for two units, Unit 10 and Unit 11, over a period from 01/08/07:00 to 01/09/07:00. The y-axis for each panel represents concentration in ppm or LEL (%). The x-axis represents Date/Time.

Unit 10 Data:

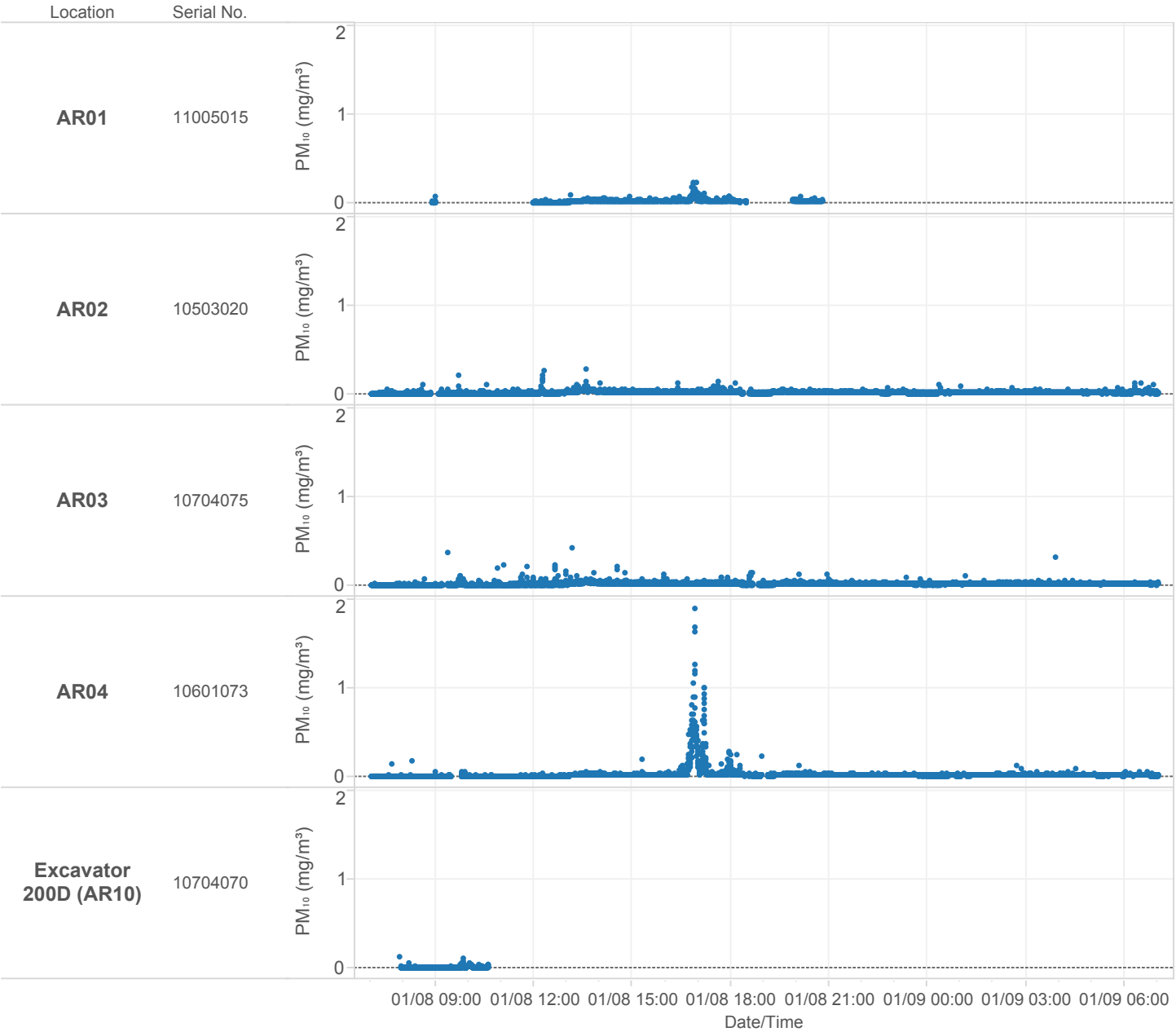
- LEL (%):** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 1.5%.
- SO₂ (ppm):** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 0.5 ppm.
- VOC (ppm):** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 0.5 ppm.

Unit 11 Data:

- Cl₂:** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 1.5 ppm.
- SO₂ (ppm):** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 0.5 ppm.
- VOC (ppm):** Concentration is generally low, with a peak around 01/08/11:00 reaching approximately 0.5 ppm.

- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
MISSION INCIDENT
Datalogged AM510 (PM₁₀) Summary
1/08/2015 07:00 - 1/09/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format